



TO: Mayor and Council
Interim City Manager

FROM: Rebecca Underhill, Director of Finance

DATE: February 28, 2014

SUBJECT: Water Meter Project Analysis

On March 28, 2012, Acting City Manager Mike Loftin submitted a memo to Mayor and Council in regards to the proposed Water Meter Replacement Project. (See attachment B for a copy of the memo). That memo contained, among other items, the following information:

- The total Water Meter Project cost for the replacement of current meters with Sensus meters
- A cost benefit analysis demonstrating the period of time required to recover the City's investment in the Sensus meters
- Projected savings expected to be realized with installation of the Sensus meters

With the completion of this project, we would like to follow-up on the projections as well as highlight a few other items:

Total Project Cost

- The total project cost including design, fiber, meters, and installation was estimated to be \$9.94 million
- Total actual costs are estimated to be \$9.29 million; a savings of \$649,470

- As detailed on this the bulk of the savings is from installation. This is a result of anticipating a greater number of the larger, more costly meters to be installed. In reality fewer of these meters and more of smaller, lower cost meters were installed.

Item	Budget	Actual	Actual (Over)/Under Budget
Design Contract	\$ 128,550	\$ 73,697	\$ 54,854
Fiber	56,200	56,200	-
Meters	7,823,834	7,838,135	(14,301)
Installation	1,740,502	1,264,520	475,982
Contingency	190,000	57,065	132,935
	\$ 9,939,086	\$ 9,289,616	\$ 649,470

Cost Benefit Evaluation Based on Actual Costs

- Initial phasing for this project, as approved in the FY12-16 CIP, was a two-year phasing in fiscal years 2013 and 2014. With savings negotiated from the initial cost of this project along with savings realized during the project, 90% of this project was completed in FY13 instead of phasing the project in two fiscal years. The \$4.1 million in actual costs over the estimated cost in FY13 is a direct result of the project being completed in a little more than a year instead of the two-year period.
- The cost benefit analysis for this project provided to Council in March 2012 projected a total cumulative estimated cost of \$23.6 million for both operating and capital costs over a 10 year period (FY13-22).
- With the project now completed along with accounting for actual costs in FY12 and FY13 and a more realistic budget for FY14, the projected cumulative cost over the 10 year period is now expected to be \$21.1 million. (See attachment A for the detail of both the actual and estimated costs.)
- This is a savings of \$2.5 million over the 10 year cumulative cost estimate that was presented to Council in March 2012. That report also projected savings of \$4.17 million over the existing system; these updated costs increase that savings estimate to \$6.67 million over ten years.

SENSUS OPTION	FY2013 Actual Costs	FY2014 Budget	FY2015 Forecast	FY2016 Forecast	FY2017 Forecast	FY2018 Forecast	FY2019 Forecast	FY2020 Forecast	FY2021 Forecast	FY2022 Forecast
SENSUS Cumulative ACTUAL Cost Net Present Value	\$10,856,507	\$12,387,981	\$13,434,175	\$14,479,338	\$15,539,940	\$16,616,668	\$17,709,999	\$18,819,524	\$19,945,825	\$21,089,412
SENSUS OPTION - ESTIMATE as Reported in March 2012	\$6,801,827	\$12,414,715	\$13,749,365	\$15,085,510	\$16,442,347	\$17,819,470	\$19,217,415	\$20,637,000	\$22,077,443	\$23,539,499
Actual Costs Over/(Under) Projected Costs	\$4,054,680	(\$26,735)	(\$315,190)	(\$606,172)	(\$902,407)	(\$1,202,803)	(\$1,507,416)	(\$1,817,476)	(\$2,131,618)	(\$2,450,087)

Detail of Projected Savings

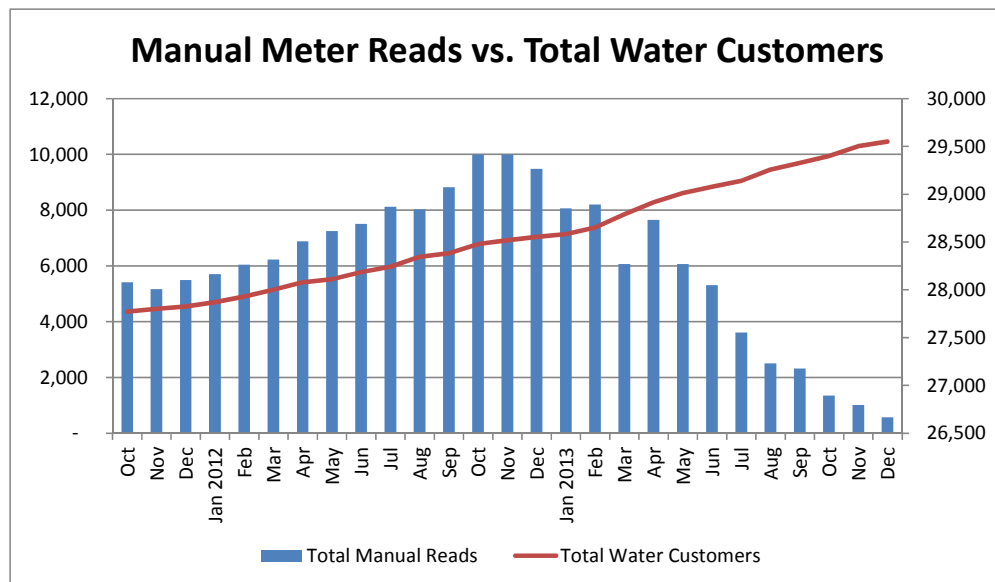
- Savings on contracted personnel:** With the installation of the Sensus meters, a savings of \$200,000 was projected in contracting additional personnel to assist with manual meter reads. This contract was reduced from \$189,600 in FY2012 to \$83,700 in

FY2013 and reduced even further in FY2014 with a budget of \$2,500. Of the \$200,000 projected in savings; we realized a savings of \$187,000 over the two year period.

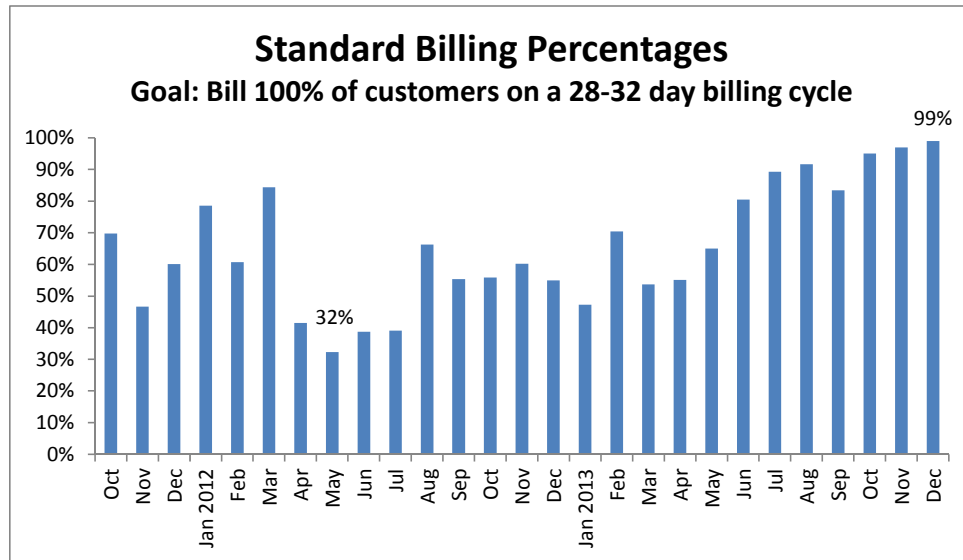
- **Reduction in field personnel's system maintenance work:** A savings of \$15,000 was projected and realized in the system maintenance required of personnel in FY13.
- **Reduction in number of Customer Service Technicians:** With the efficiency of the Sensus meters, we have decreased our full-time equivalents for customer service technicians from five to four and continue to assess for additional reductions in the future

Other Efficiencies worth Noting

- **Faster Customer Service for our Citizens:** Utilizing the Neptune meters, the length of time necessary to respond to a citizen's billing question was two to three days depending on the nature of the call and the need for the customer service technicians to physically re-read the meter. With the Sensus meters, the length of time to respond to a citizen's inquiry can now be minutes; in addition, we now have the ability to email the citizen results and usage charts.
- **Manual Meter Reads:** With the efficiency of the Sensus meters over the Neptune meters, manual meter reads have decreased from a high of 9,482 manual reads in December 2012 to only 575 manual reads in December 2013. While total water customers continue to increase 3.2 percent, with efficiency of the Sensus meters manual meter reads have significantly decreased allowing our customer service technicians to be more efficient.



- **Consistent Billing:** In order to achieve consistent billing the goal is to bill 100 percent of all customers within a 28-32 day billing cycle. Billing on a 28-32 billing cycle has increased from a low in May 2012 of 32% to a high in December 2013 of 99%.



Attachments:

A – Detailed schedule of actual and estimated costs

B – Memo provided to Council in March 2012

Attachment A

NOTE: In order to obtain a realistic comparison of actual costs to estimated costs the actual costs above include costs associated with the purchase of water meters for new construction.

COST BENEFIT ANALYSIS
WATER METER INSTALLATION PROJECT

SENSUS OPTION - As Reported in March 2012	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
OPERATING COSTS											
Phone Customer Service	315,168	315,168	321,500	329,500	339,400	349,600	360,100	370,900	382,000	393,500	405,300
Growth Adjustment		2.0%	2.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Adjusted Phone Customer Service	315,168	321,500	329,500	339,400	349,600	360,100	370,900	382,000	393,500	405,300	417,500
CPI Adjustment	1.000	1.025	1.051	1.077	1.104	1.132	1.160	1.189	1.219	1.249	1.280
Adjusted Phone Customer Service wh CPI	315,168	329,500	346,300	365,500	386,000	407,600	430,200	454,200	479,700	506,200	534,400
Field Customer Service	118,686	118,686	121,100	104,100	87,200	69,800	71,900	74,100	76,300	78,600	81,000
Growth Adjustment		2.0%	2.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Program Savings			(20,000)	(20,000)	(20,000)	-	-	-	-	-	-
Adjusted Field Customer Service	118,686	121,100	104,100	87,200	69,800	71,900	74,100	76,300	78,600	81,000	83,400
CPI Adjustment	1.000	1.025	1.051	1.077	1.104	1.132	1.160	1.189	1.219	1.249	1.280
Adjusted Field Customer Service wh CPI	118,686	124,100	109,400	93,900	77,100	81,400	86,000	90,700	95,800	101,200	106,800
Connections/ Disconnects	171,528	171,528	175,000	179,400	184,800	190,300	196,000	201,900	208,000	214,200	220,600
Growth Adjustment		2.0%	2.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Adjusted Connections/ Disconnects	171,528	175,000	179,400	184,800	190,300	196,000	201,900	208,000	214,200	220,600	227,200
CPI Adjustment	1.000	1.025	1.051	1.077	1.104	1.132	1.160	1.189	1.219	1.249	1.280
Adjusted Connections/ Disconnects wh CPI	171,528	179,400	188,500	199,000	210,100	221,900	234,200	247,300	261,100	275,500	290,800
System Maintenance	269,510	269,510	259,900	266,400	274,400	282,600	291,100	299,800	308,800	318,100	327,600
Growth Adjustment		2.0%	2.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Program Savings		(15,000)	-	-	-	-	-	-	-	-	-
Adjusted System Maintenance	269,510	259,900	266,400	274,400	282,600	291,100	299,800	308,800	318,100	327,600	337,400
CPI Adjustment	1.000	1.025	1.051	1.077	1.104	1.132	1.160	1.189	1.219	1.249	1.280
Adjusted System Maintenance wh CPI	269,510	266,400	280,000	295,500	312,000	329,500	347,800	367,200	387,800	409,200	431,900
Meter Reading	665,652	665,652	579,000	493,500	508,300	523,500	539,200	555,400	572,100	589,300	607,000
Growth Adjustment		2.0%	2.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Program Savings		(100,000)	(100,000)	-	-	-	-	-	-	-	-
Adjusted Meter Reading	665,652	579,000	493,500	508,300	523,500	539,200	555,400	572,100	589,300	607,000	625,200
CPI Adjustment	1.000	1.025	1.051	1.077	1.104	1.132	1.160	1.189	1.219	1.249	1.280
Adjusted Meter Reading wh CPI	665,652	593,500	518,700	547,400	577,900	610,400	644,300	680,200	718,400	758,100	800,300
TOTAL ADJUSTED OPERATING COSTS WITH CPI	1,540,544	1,492,900	1,442,900	1,501,300	1,563,100	1,650,800	1,742,500	1,839,600	1,942,800	2,050,200	2,164,200
CAPITAL COSTS											
Meter Replacement		\$5,581,000	\$4,628,000								
CPI Adjustment	1.000	1.000	1.000	1.025	1.051	1.077	1.104	1.132	1.160	1.189	1.219
Inflated Meter Replacement		\$5,581,000	\$4,628,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ANNUAL COSTS		\$7,073,900	\$6,070,900	\$1,501,300	\$1,563,100	\$1,650,800	\$1,742,500	\$1,839,600	\$1,942,800	\$2,050,200	\$2,164,200
CUMULATIVE COST		\$7,073,900	\$13,144,800	\$14,646,100	\$16,209,200	\$17,860,000	\$19,602,500	\$21,442,100	\$23,384,900	\$25,435,100	\$27,599,300
SENSUS Cumulative ESTIMATED Cost Net Present Value As Reported in March 2012	4%	\$6,801,827	\$12,414,715	\$13,749,365	\$15,085,510	\$16,442,347	\$17,819,470	\$19,217,415	\$20,637,000	\$22,077,443	\$23,539,499
Baseline Assumptions											
Annual growth rates - Affect all categories		2.0%	2.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Discount Rate of 4% applied to cumulative costs											
No meter replacement costs - All meters under warranty											
Effect on meter reading and billing - Eliminate drive by, and data loading exercise as well as contract workers		(\$100,000)	(\$100,000)								
System Maintenance - Reduction of field personnel's system maintenance work (\$15,000); Net adjustment of software Maintenance of software (\$10K Neptune less \$6K Sensus) is included.		(\$15,000)									
Field Customer Service - Should drop to half over three year period.			(\$20,000)	(\$20,000)	(\$20,000)						



MEMORANDUM

To: Mayor and City Council

From: Michael W. Loftin, Acting City Manager

Subject: Water Meter Project

Date: March 28, 2012

On Monday evening, January 23, we presented City Council with a proposal to replace the city's current water metering system with a system made by Sensus that is WiFi based and state of the art. In that meeting, we were asked to develop additional information on this project, including:

1. A cost benefit analysis that would demonstrate the period of time required to recover our investment in the Sensus meters;
2. The cost of returning to manual water meters and a manual meter reading system; and
3. Bench testing of the Sensus water meters to test the claims of superior accuracy of measuring water.

Since that time, the number of meters with non-readable electronic measuring units has increased to over 6,000 and the need to move ahead with this project is paramount. Accordingly, barring negative input from the City Council individually or collectively, we plan to move ahead with the project. This includes issuance of an installation RFP to select an installer and presentation of Council agenda items to award the installation contract as well as an agenda item to purchase the Sensus meters.

Recommendation

The recommendation to install Sensus meters citywide is confirmed by the following analysis. The total project cost is now estimated at \$10.2 million, less than the \$11.4 million cost presented at the time of the January 23 meeting. This is because of a negotiated \$1.1 million reduction in prices for the Sensus meters (see cost detail for the Sensus project in Attachment A).

Background

The city has approximately 28,000 water meters manufactured by Neptune and read using "drive-by" meter reading capability. This system, installed beginning in 2002, is failing, with over 6,000 meters with out of service electronic registers spread all over town (see Attachment B). The useful life of the Neptune meters themselves is fifteen years, so replacing the EMU alone is not a cost effective option. At this point, replacing the out of date meters and EMU's citywide is the only cost-effective option. This

memo presents the responses to the three questions posed by City Council on January 23 and a recommendation to implement the meter replacement project using Sensus meters.

Meter Testing

As part of the project, two independent meter testing companies tested 1-inch meters from Sensus and Neptune. Each company was given five new Neptune meters and ten new Sensus meters. Each meter was bench tested on a pressurized closed water system to the American Water Works Association M-6 standards Sensus recommendations. Prior to testing, the line was checked for leaks to ensure accurate results. Upon connecting each meter, the line and the meter were purged to assure that no air or debris were in the line. As noted below, each meter was tested by a flow of water through the meters on the bench into a certified test tank. A reading was taken from each meter and compared to the exact known quantity of water in the test tank. The comparison was used to determine the percent of accuracy of each meter.

AWWA 1-inch C-700 PD Meters

3/4-inch/Gallons per minute at 10 gallons total test
4 Gallons per minute at 10 gallons total test
40 Gallon per minute at 100 gallons total test

Sensus Recommendations

Flow 100 gallons to purge air
1/10 Gallon per minute at 10 gallons total test
5 Gallon per minute at 100 gallons total test
10 Gallon per minute at 100 gallons total test
35 Gallon per minute at 100 gallons total test

Overall Testing Results (See Attachment C)

Sensus Meters	100.99%
Neptune Meters	100.08%

As you can see the difference is minimal, less than 1% between the Sensus and Neptune meters. Therefore, the apparent benefits of using the Sensus meters for purposes of greater accuracy has been eliminated as a factor in the following cost-benefit analysis. However, the fact that the Sensus meters measured approximately 1% more water than actually was used in the test does present us with the need to consider a 1% rate decrease to offset any apparent over billing that might occur.

Detailed results of the testing are part of Attachment C.

Cost-Benefit Methodology

The Utility Billing budget is being allocated according to five activity categories as follows:

1. Phone customer service, including contacts with customers over the phone primarily on billing and payment issues.
2. Field customer service, including all field contacts and field investigations of conditions reported by customers.
3. Connections and disconnections, including calls and field work concerning ongoing efforts to hook up new customers and disconnect service whether for reason of a resident move or disconnection for purposes of delinquent payment.
4. System maintenance, including removal, replacement and/or testing of meters for reason of suspected malfunction.
5. Meter reading and billing, including field drive-by meter reading, follow up manual reading where meter electronic sending units are not working, as well as loading electronic usage data into the utility billing system.

The results of this allocation provide the basis for estimating the cost impact of each of three alternative approaches to meter reading and replacing necessary meters. Annual totals, including the operating and project cost, are totaled, accumulated, and compared. Annual growth and inflation are a part of the projections as well as a 4% discount rate.



Attachment A

**OPINION OF PROBABLE CONSTRUCTION COST
FOR
AMI NETWORK & METER REPLACEMENT
CITY OF LEAGUE CITY, TX
PHASE I**

March 15, 2012

Item No.	Description	Unit	Qty.	Unit Price	Total
1.	Bonds & Insurance	L.S.	1	\$22,000	\$22,000
2.	Network Infrastructure (2 TGB's)	L.S.	1	158,079	158,079
					Network Subtotal
3.	5/8" Sensus iPerl Meters	Ea.	4,223	111	468,753
4.	5/8" Sensus iPerl Meter Installation	Ea.	4,223	40	168,920
5.	Single-port Smart Point MXU for 5/8" Replacement Meters in Single Box	Ea.	115	114	13,110
6.	Dual-port Smart Point MXU for 5/8" Replacement Meters in Dual Box	Ea.	2,054	130	267,020
7.	3/4" Sensus iPerl Meters	Ea.	4	111	444
8.	3/4" Sensus iPerl Meter Installation	Ea.	4	40	160
9.	Single-port Smart Point MXU for 3/4" Replacement Meters	Ea.	4	114	456
10.	1" Sensus iPerl Meters	Ea.	9,814	152	1,491,728
11.	Single-port Smart Point MXU for 1" Replacement Meters	Ea.	9,814	114	1,118,796
12.	1" Sensus iPerl Meter Installation	Ea.	9,814	40	392,560
					Small Meter Subtotal
13.	1.5" Omni T2 Meters	Ea.	97	539	52,272
14.	Single-port Smart Point MXU for 1.5" Replacement Meters	Ea.	97	114	11,058
15.	1.5" Meter Installation	Ea.	97	105	10,185
16.	2" Omni C2 Meters	Ea.	370	909	336,289
17.	Single-port Smart Point MXU for 2" Replacement Meters	Ea.	370	114	42,180
18.	2" Meter Installation	Ea.	370	166	61,420
19.	3" Omni C2 Meters	Ea.	16	1,151	18,416
20.	Single-port Smart Point MXU for 3" Replacement Meters	Ea.	16	114	1,824
21.	3" Meter Installation	Ea.	16	345	5,520
22.	4" Omni C2 Meters	Ea.	17	2,000	34,000
23.	Single-port Smart Point MXU for 4" Replacement Meters	Ea.	17	114	1,938
24.	4" Meter Installation	Ea.	17	465	7,905
25.	6" Omni C2 Meters	Ea.	35	3,454	120,890
26.	Single-port Smart Point MXU for 6" Replacement Meters	Ea.	35	114	3,990
27.	6" Meter Installation	Ea.	35	650	22,750
28.	8" Omni C2 Meters	Ea.	8	5,580	44,640
29.	Single-port Smart Point MXU for 8" Replacement Meters	Ea.	8	114	912
30.	8" Meter Installation	Ea.	8	1,000	8,000
					Large Meter Subtotal
31.	Yoke Replacement/Fittings (25% of 1" Meters)	Ea.	2,500	75	<u>187,500</u>

SUBTOTAL	\$5,074,000
Contingencies (10%)	<u>507,000</u>
TOTAL	<u>\$5,581,000</u>

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**OPINION OF PROBABLE CONSTRUCTION COST
FOR
AMI NETWORK & METER REPLACEMENT
CITY OF LEAGUE CITY, TX
PHASE II**

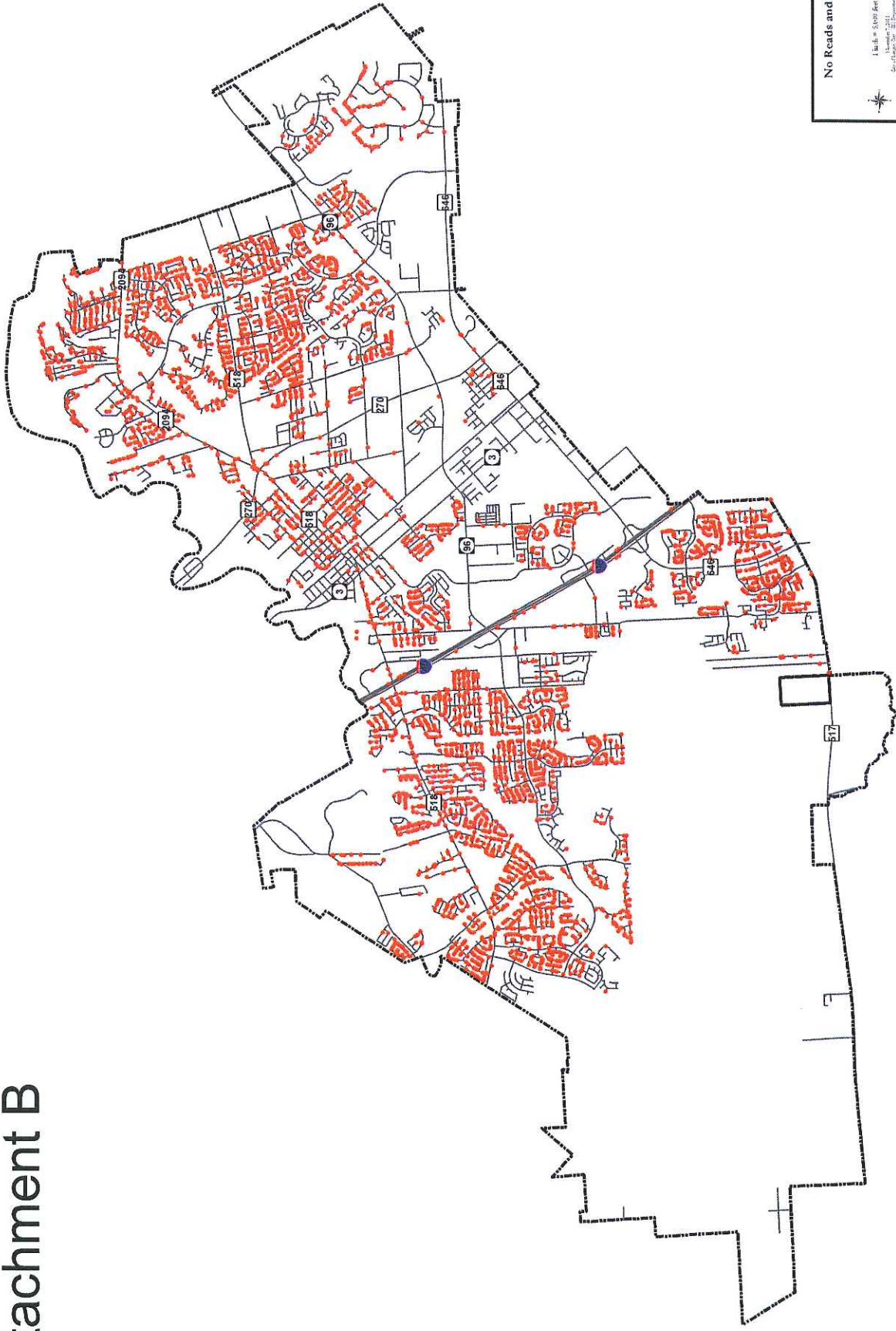
March 15, 2012

Item No.	Description	Unit	Qty.	Unit Price	Total
1.	Bonds & Insurance	L.S.	1	\$19,000	\$19,000
3.	5/8" Sensus iPerl Meters	Ea.	3,610	111	400,710
4.	5/8" Sensus iPerl Meter Installation	Ea.	3,610	40	144,400
5.	Single-port Smart Point MXU for 5/8" Replacement Meters in Single Box	Ea.	1,251	114	142,614
6.	Dual-port Smart Point MXU for 5/8" Replacement Meters in Dual Box	Ea.	1,237	130	160,810
7.	3/4" Sensus iPerl Meters	Ea.	3	111	333
8.	3/4" Sensus iPerl Meter Installation	Ea.	3	40	120
9.	Single-port Smart Point MXU for 3/4" Replacement Meters	Ea.	3	114	342
10.	1" Sensus iPerl Meters	Ea.	9,464	152	1,438,528
11.	Single-port Smart Point MXU for 1" Replacement Meters	Ea.	9,464	114	1,078,896
12.	1" Sensus iPerl Meter Installation	Ea.	9,464	40	378,560
Small Meter Subtotal					
13.	1.5" Omni T2 Meters	Ea.	37	539	19,939
14.	Single-port Smart Point MXU for 1.5" Replacement Meters	Ea.	37	114	4,218
15.	1.5" Meter Installation	Ea.	37	105	3,885
16.	2" Omni C2 Meters	Ea.	158	909	143,605
17.	Single-port Smart Point MXU for 2" Replacement Meters	Ea.	158	114	18,012
18.	2" Meter Installation	Ea.	158	166	26,228
19.	3" Omni C2 Meters	Ea.	2	1,151	2,302
20.	Single-port Smart Point MXU for 3" Replacement Meters	Ea.	2	114	228
21.	3" Meter Installation	Ea.	2	345	690
22.	4" Omni C2 Meters	Ea.	4	2,000	8,000
23.	Single-port Smart Point MXU for 4" Replacement Meters	Ea.	4	114	456
24.	4" Meter Installation	Ea.	4	465	1,860
25.	6" Omni C2 Meters	Ea.	6	3,454	20,724
26.	Single-port Smart Point MXU for 6" Replacement Meters	Ea.	6	114	684
27.	6" Meter Installation	Ea.	6	650	3,900
28.	8" Omni C2 Meters	Ea.	-	5,580	0
29.	Single-port Smart Point MXU for 8" Replacement Meters	Ea.	-	114	0
30.	8" Meter Installation	Ea.	-	1,000	0
Large Meter Subtotal					
31.	Yoke Replacement/Fittings (25% of 1" Meters)	Ea.	2,500	75	<u>187,500</u>

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SUBTOTAL	\$4,207,000
Contingencies (10%)	<u>421,000</u>
TOTAL	\$4,628,000

Attachment B



No Reads and Invalids



Meters tested the week of
March 5th-8th, 2012

METER TESTING SUMMARY

Attachment C

TESTING COMPANY	METER TYPE	METER NUMBER	TESTING AVERAGE	OVERALL AVERAGE
Accurate Meter	Sensus	73099617	99.63%	
Accurate Meter	Sensus	73099634	99.68%	
Accurate Meter	Sensus	73099605	99.88%	
Accurate Meter	Sensus	73099616	99.73%	
Accurate Meter	Sensus	73099627	99.80%	
Accurate Meter	Sensus	73099635	99.80%	
Accurate Meter	Sensus	73099610	99.73%	
Accurate Meter	Sensus	73099613	99.75%	
Accurate Meter	Sensus	73099631	99.75%	
Accurate Meter	Sensus	73099611	100.15%	
				99.79%

Fluid Meter	Sensus	73099609	101.04%	
Fluid Meter	Sensus	73099603	100.87%	
Fluid Meter	Sensus	73099602	101.07%	
Fluid Meter	Sensus	73099604	101.16%	
Fluid Meter	Sensus	73099607	100.83%	
Fluid Meter	Sensus	73099606	101.07%	
Fluid Meter	Sensus	73099633	101.47%	
Fluid Meter	Sensus	73099626	101.23%	
Fluid Meter	Sensus	73099632	100.75%	
Fluid Meter	Sensus	73099630	100.79%	
				101.03%

Accurate Meter	Neptune	52390396	100.17%	
Accurate Meter	Neptune	52390397	100.17%	
Accurate Meter	Neptune	52390398	100.27%	
Accurate Meter	Neptune	52390390	100.43%	
Accurate Meter	Neptune	52390391	99.83%	
				100.17%

Fluid Meter	Neptune	52390414	99.99%	
Fluid Meter	Neptune	52390415	99.61%	
Fluid Meter	Neptune	52390416	99.62%	
Fluid Meter	Neptune	52390392	100.65%	
Fluid Meter	Neptune	52390352	99.84%	
				99.94%

ATTACHMENT D

UTILITY FUND
EXPENDITURE SUMMARY
MANAGEMENT SERVICES DIRECTORATE
UTILITY BILLING

ACCOUNT NUMBER	ACCOUNT DESCRIPTION	FY2012 Adopted	Phone Customer Service	Field Customer Service	Connections/ Disconnections	System Maintenance	Meter Reading/Billing						
Personnel Services													
SALARIES													
54788	Utility Billing Manager	54,788	22,463	4,383	1,644	2,739	23,559						
36331	Utility Account Representative	16,349	727	727	727	727	17,802						
22083	Utility Account Representative	49,074	981	981	981	981	24,048						
48115	Utility Account Representative	21,652	962	962	962	962	23,578						
15107	Utility Account Representative	33,571	671	671	671	671	16,450						
24794	Accounts Receivable Clerk	24,794	-	-	-	-	-						
34264	Accounts Receivable Clerk	34,264	-	-	-	-	-						
26605	Accounts Receivable Clerk	26,605	-	-	-	-	-						
27416	Customer Service Technician	27,416	-	-	-	-	-						
23895	Customer Service Technician	23,895	-	-	-	-	-						
26384	Customer Service Technician	26,384	-	-	-	-	-						
24373	Customer Service Technician	24,373	-	-	-	-	-						
30519	Lead Customer Service Tech	30,519	-	-	-	-	-						
34113	Temporary	34,113	-	-	-	-	-						
5002	TOTAL Salaries	474,220	217,430	40,866	18,241	25,965	171,715						
5004	Vacancy Savings	5004	-	-	-	-	-						
5006	Separation Pay	(21,510)	(8,819)	(1,721)	(645)	(1,076)	(9,249)						
5009	Certification Pay	2,400	984	192	72	120	1,032						
5012	Workers Compensation	-	-	-	-	-	-						
5014	Retirement	64,820	26,576	5,185	1,945	3,241	27,873						
5015	Longevity	10,700	4,397	856	321	535	4,601						
5016	FICA taxes	38,030	15,592	3,042	1,141	1,902	16,353						
5018	Employee Insurance	87,700	35,957	7,016	2,631	4,385	37,711						
5020	Employee Allowance	1,800	738	144	54	90	774						
5025	Dependent Insurance	24,800	10,168	1,984	744	1,240	10,664						
5030	Overtime	6,000	3,280	640	240	400	3,440						
Total Personnel Services			\$ 690,960	\$ 306,293	\$ 58,205	\$ 24,744	\$ 38,502	\$ 264,974					
Supplies													
5101	Office Supplies	5,000	2,050	400	150	250	2,150						
5119	Office Furniture	-	-	-	-	-	-						
5125	Small Tools & Operating Supplies	1,500	615	120	45	75	645						
5145	Gas and Oil	16,000	-	4,000	1,600	2,400	8,000						
5168	Water Meters	250,000	-	-	125,000	125,000	-						
5169	Water Meter Parts and Supplies	75,000	-	-	-	75,000	-						
5194	Computer Equipment and Software	500	210	65	30	45	150						
Total Supplies			\$ 348,000	\$ 2,875	\$ 4,585	\$ 126,825	\$ 202,770	\$ 10,945					
Repairs and Maintenance													
5215	Building and Ground Maintenance	-	-	-	-	-	-						
5230	Vehicle Maintenance	22,400	-	5,600	2,240	3,360	11,200						
5240	Equipment Repair and Maintenance	27,665	-	6,916	2,767	4,150	13,833						
5246	AC and Heating Repair & Maint.	-	-	-	-	-	-						
Total Repairs and Maintenance			\$ 50,065	\$ -	\$ 12,516	\$ 5,007	\$ 7,510	\$ 25,033					
Services and Charges													
5305	Professional Services	130,100	-	32,525	13,010	19,515	65,050						
5310	Membership and Dues	400	-	100	40	60	200						
5311	Postage and Freight	134,000	-	-	-	-	134,000						
5312	Banking Fees	140,000	-	-	-	-	140,000						
5313	Printing and Binding	16,000	-	-	-	-	16,000						
5321	Uniform Expense	2,000	-	500	200	300	1,000						
5327	Motor Pool Lease Fees	14,600	-	3,650	1,460	2,190	7,300						
5344	Travel and Training	2,420	0	605	242	363	1,210						
5352	Utility Expense - Telephone	-	-	-	-	-	-						
Total Services and Charges			\$ 439,520	\$ -	\$ 37,380	\$ 14,952	\$ 22,428	\$ 364,760					
Special Programs and Events													
5418	Public Awareness	12,000	6,000	6,000	-	-	-						
Total Special Programs and Events			\$ 12,000	\$ 6,000	\$ 6,000	\$ -	\$ -	\$ -					
Capital Outlay													
Total Capital Outlay			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					
Transfers													
Total Transfers To:			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					
Debt Service													
Total Debt Service			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -					
Total Expenses								\$ 1,540,545	\$ 315,168	\$ 118,688	\$ 171,528	\$ 289,510	\$ 685,652

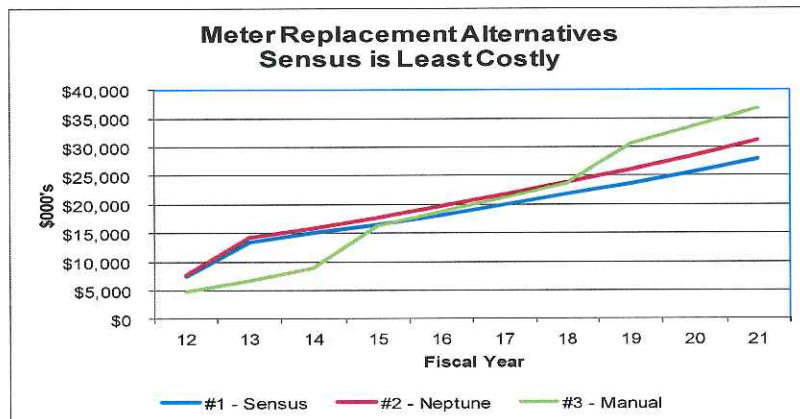
Alternatives and Costs (See Attachment E)

Three alternatives are discussed here. A fourth option, taking no action, is not discussed here because it is not an option. The number of out of service meters is now in excess of 6,000, and action is required. The project will be conducted beginning in FY 2012 and ending in FY 2013.

- 1. Full implementation of the Sensus alternative with WiFi capability.** This alternative includes replacement of every existing water meter and placement of a WiFi receiving unit on each of two of the City's water towers. One-time project cost: \$10.2 million. Ten year operating and project cost: \$23.5 million.
Cost Impact of Alternative #1: Drive-by meter reading will be eliminated, along with loading of meter reading data into the utility billing system (\$200,000 savings annually). Also some benefits will be realized in reducing field personnel's work in system maintenance and field customer service, based on ready availability of information on individual accounts accessible through the system. Also, contract field technicians would be eliminated entirely.
- 2. Replacement of water meters out of service with Neptune meters.** This option retains the drive by meter reading approach because the Neptune WiFi system is not feasible to use at this time. By Neptune's own propagation study, fifteen receivers would be needed citywide to utilize Neptune's WiFi system. One-time project Cost: \$11.8 million. Ten year operating and project cost: \$27.7 million.
Cost Impact of Alternative #2: Savings would be available immediately through elimination of the contract field technicians. A slight increase in System Maintenance costs would be realized as Neptune units currently failing at a steady rate would be replaced instead of being manually read.
- 3. Reverting to manually read system:** This entails installing manually read registers in all meters. Project Cost: \$11.3 million spread over eight years. Ten year operating and project cost: \$29.7 million.
Cost Impact of Alternative #3: The cost of reading meters would increase by 25% (\$160,000) to provide sufficient personnel to manually read 28,000 meters. The manually read registers would cost less to convert to this option in the near term would require replacement of all meters by 2020 at the end of their useful life. (Note; Two replacement phases are shown in the cash flow analysis, 2016 and 2020.) The cost of phone customer service (10% increase or \$30,000) and fiel customer service (10% increase or \$12,000) would also occur due to an increase in human error in the reading and reporting process.

Results and Recommendation

Alternative #1, Sensus is the most cost effective solution for the City.



The Sensus alternative is less expensive than the Neptune alternative, saving \$525,000 in year one, and a cumulative savings of \$4.2 million over a ten year period. Sensus begins to pay for itself compared with the manual read system in year five of the ten year analysis. For the entire ten year period, Sensus is \$6.2 million less than the manual read option.

In addition Sensus provides the following benefits to the City compared with the other alternatives:

- Lowest cost "full featured" option;
- Only two receivers required – will use existing water towers;
- Sensus delivers the highest power, FCC-Licensed primary-use communications system
- No moving meter reading parts. Sensus utilizes a flow tube.
- Warranty applicable to both meter and register as one unit
- Works with existing cast iron meter boxes
- "On-Demand" meter reading
- Can be read by drive-by if WiFi is down

Please let me know if you need further information on this matter.



Michael W. Loftin
Acting City Manager

Attachments

SENSUS OPTION		FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
OPERATING COSTS												
Phone Customer Service		315,168	315,168	321,500	329,500	339,400	349,600	360,100	370,900	382,000	393,500	405,300
	Growth Adjustment	2.0%	2.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Adjusted Phone Customer Service	CPI Adjustment	315,168	321,500	329,500	339,400	349,600	360,100	370,900	382,000	393,500	405,300	417,500
		1,000	1,025	1,051	1,077	1,104	1,132	1,160	1,189	1,219	1,249	1,280
Adjusted Phone Customer Service wh CPI		315,168	329,500	346,300	365,500	386,000	407,600	430,200	454,200	479,700	506,200	534,400
Field Customer Service		118,686	118,686	121,100	104,100	87,200	69,800	71,900	74,100	76,300	78,500	81,000
	Growth Adjustment	2.0%	2.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Program savings			(20,000)	(20,000)	(20,000)	(20,000)						83,400
Adjusted Field Customer Service	CPI Adjustment	118,686	121,100	104,100	87,200	69,800	71,900	74,100	76,300	78,500	81,000	1,280
		1,000	1,025	1,051	1,077	1,104	1,132	1,160	1,189	1,219	1,249	1,280
Adjusted Field Customer Service wh CPI		118,686	124,100	109,400	93,900	77,100	81,400	86,000	90,700	95,800	101,200	106,800
Connections/ Disconnects		171,528	171,528	175,000	179,400	184,800	190,300	196,000	201,900	208,000	214,200	220,600
	Growth Adjustment	2.0%	2.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Adjusted Connections/ Disconnects	CPI Adjustment	171,528	175,000	179,400	184,800	190,300	196,000	201,900	208,000	214,200	220,600	227,200
		1,000	1,025	1,051	1,077	1,104	1,132	1,160	1,189	1,219	1,249	1,280
Adjusted Connections/ Disconnects wh CPI		171,528	179,400	188,500	199,000	210,100	221,900	234,200	247,300	261,100	275,500	290,800
System Maintenance		269,510	269,510	259,900	266,400	274,400	282,600	291,100	299,800	308,800	318,100	327,600
	Growth Adjustment	2.0%	2.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Program savings		(15,000)	0	0	0	0	0	0	0	0	0	0
Adjusted System Maintenance	CPI Adjustment	269,510	259,900	266,400	274,400	282,600	291,100	299,800	308,800	318,100	327,600	337,400
		1,000	1,025	1,051	1,077	1,104	1,132	1,160	1,189	1,219	1,249	1,280
Adjusted System Maintenance wh CPI		269,510	266,400	280,000	295,500	312,000	329,500	347,800	367,200	387,800	409,200	431,900
Meter Reading		665,652	665,652	579,000	493,500	508,300	523,500	539,200	555,400	572,100	589,300	607,000
	Growth Adjustment	2.0%	2.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Program savings		(100,000)	(100,000)	0	0	0	0	0	0	0	0	0
Adjusted Meter Reading	CPI Adjustment	665,652	579,000	493,500	508,300	523,500	539,200	555,400	572,100	589,300	607,000	625,200
		1,000	1,025	1,051	1,077	1,104	1,132	1,160	1,189	1,219	1,249	1,280
Adjusted Meter Reading wh CPI		665,652	593,500	518,700	547,400	577,900	610,400	644,300	680,200	718,400	758,100	800,300
TOTAL ADJUSTED OPERATING COSTS WITH CPI		1,540,544	1,492,900	1,442,900	1,501,300	1,563,100	1,650,800	1,742,500	1,839,600	1,942,800	2,050,200	2,164,200
CAPITAL COSTS												
Meter Replacement			\$5,581,000	\$4,628,000								
	CPI Adjustment	1,000	1,000	1,000	1,025</							

MUDDLE THROUGH WITH NEPTUNE													
OPERATING COSTS			FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	FY2019	FY2020	FY2021	FY2022
Phone Customer Service			315,168	315,168	321,500	329,500	339,400	349,600	360,100	370,900	382,000	393,500	405,300
Growth Adjustment			2.0%	2.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Adjusted Phone Customer Service			315,168	321,500	329,500	339,400	349,600	360,100	370,900	382,000	393,500	405,300	417,500
CPI Adjustment			1,000	1,025	1,051	1,077	1,104	1,132	1,160	1,189	1,219	1,249	1,280
Adjusted Phone Customer Service w/ CPI			315,168	329,500	346,300	365,500	386,000	407,600	430,200	454,200	479,700	506,200	534,400
Field Customer Service			118,686	118,686	121,100	124,100	127,800	131,600	135,500	139,600	143,800	148,100	152,500
Growth Adjustment			2.0%	2.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Adjusted Field Customer Service			118,686	121,100	124,100	127,800	131,600	135,500	139,600	143,800	148,100	152,500	157,100
CPI Adjustment			1,000	1,025	1,051	1,077	1,104	1,132	1,160	1,189	1,219	1,249	1,280
Adjusted Field Customer Service w/ CPI			118,686	124,100	130,400	137,600	145,300	153,400	161,900	171,000	180,500	190,500	201,100
Connections/ Disconnects			171,528	171,528	175,000	179,400	184,800	190,300	196,000	201,900	208,000	214,200	220,600
Growth Adjustment			2.0%	2.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Adjusted Connections/ Disconnects			171,528	175,000	179,400	184,800	190,300	196,000	201,900	208,000	214,200	220,600	227,200
CPI Adjustment			1,000	1,025	1,051	1,077	1,104	1,132	1,160	1,189	1,219	1,249	1,280
Adjusted Connections/ Disconnects w/ CPI			171,528	179,400	188,500	199,000	210,100	221,900	234,200	247,300	261,100	275,500	290,800
System Maintenance			269,510	269,510	280,200	312,800	322,200	331,900	341,900	352,200	362,800	373,700	384,900
Growth Adjustment			2.0%	2.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Adjusted System Maintenance			269,510	290,200	312,800	322,200	331,900	341,900	352,200	362,800	373,700	384,900	396,400
CPI Adjustment			1,000	1,025	1,051	1,077	1,104	1,132	1,160	1,189	1,219	1,249	1,280
Adjusted System Maintenance w/ CPI			269,510	297,500	328,800	347,000	366,400	387,000	408,600	431,400	455,500	480,700	507,400
Meter Reading			665,652	665,652	645,800	628,600	647,500	666,900	686,900	707,500	728,700	750,600	773,100
Growth Adjustment			2.0%	2.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Adjusted Meter Reading			665,652	645,800	628,600	647,500	666,900	686,900	707,500	728,700	750,600	773,100	796,300
CPI Adjustment			1,000	1,025	1,051	1,077	1,104	1,132	1,160	1,189	1,219	1,249	1,280
Adjusted Meter Reading w/ CPI			665,652	661,900	660,700	697,400	736,300	777,600	820,700	866,400	915,000	965,600	1,019,300
TOTAL ADJUSTED OPERATING COSTS WITH CPI			1,540,544	1,592,400	1,654,700	1,746,500	1,844,100	1,947,500	2,055,600	2,170,300	2,291,800	2,418,500	2,553,000
CAPITAL COSTS													
Meter Replacement				\$5,880,000	\$5,920,000								
CPI Adjustment			1,000	1,025	1,051	1,077	1,104	1,132	1,160	1,189	1,219	1,249	1,280
Inflated Meter Replacement				\$6,027,000	\$6,222,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ANNUAL COSTS				\$7,619,400	\$7,876,7								

[illegible]

ATTACHMENT E COST BENEFIT ANALYSIS WATER METER INSTALLATION PROJECT THREE ALTERNATIVES

Phone Customer Service	Growth Adjustment	315,168	315,168	321,500	361,700	372,600	383,800	395,300	407,200	419,400	432,000	445,000
			2.0%		12.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Adjusted Phone Customer Service	CPI Adjustment	315,168	321,500	361,700	372,600	383,800	395,300	407,200	419,400	432,000	445,000	458,400
		1.000	1.025	1.051	1.077	1.104	1.132	1.160	1.189	1.219	1.249	1.280
Adjusted Phone Customer Service w/ CPI		315,168	329,500	380,100	401,300	423,700	447,500	472,400	498,700	526,600	555,800	586,800
Field Customer Service	Growth Adjustment	118,686	118,686	121,100	136,200	140,300	144,500	148,800	153,300	157,900	162,600	167,500
			2.0%		12.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Adjusted Field Customer Service	CPI Adjustment	118,686	121,100	136,200	140,300	144,500	148,800	153,300	157,900	162,600	167,500	172,500
		1.000	1.025	1.051	1.077	1.104	1.132	1.160	1.189	1.219	1.249	1.280
Adjusted Field Customer Service w/ CPI		118,686	124,100	143,100	151,100	159,500	168,400	177,800	187,700	198,200	209,200	220,800
Connections/ Disconnects	Growth Adjustment	171,528	171,528	175,000	179,400	184,800	190,300	196,000	201,900	208,000	214,200	220,600
			2.0%		2.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Adjusted Connections/ Disconnects	CPI Adjustment	171,528	175,000	179,400	184,800	190,300	196,000	201,900	208,000	214,200	220,600	227,200
		1.000	1.025	1.051	1.077	1.104	1.132	1.160	1.189	1.219	1.249	1.280
Adjusted Connections/ Disconnects w/ CPI		171,528	179,400	188,500	199,000	210,100	221,900	234,200	247,300	261,100	275,500	290,800
System Maintenance	Growth Adjustment	269,510	269,510	274,900	350,500	361,000	371,800	383,000	394,500	406,300	418,500	431,100
			2.0%		27.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Adjusted System Maintenance	CPI Adjustment	269,510	274,900	350,500	361,000	371,800	383,000	394,500	406,300	418,500	431,100	444,000
		1.000	1.025	1.051	1.077	1.104	1.132	1.160	1.189	1.219	1.249	1.280
Adjusted System Maintenance w/ CPI		269,510	281,800	368,400	388,800	410,500	433,600	457,600	483,100	510,200	538,400	568,300
Meter Reading	Growth Adjustment	665,652	665,652	679,000	865,700	891,700	918,500	946,100	974,500	1,003,700	1,033,800	1,064,800
			2.0%		27.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%
Adjusted Meter Reading	CPI Adjustment	665,652	679,000	865,700	891,700	918,500	946,100	974,500	1,003,700	1,033,800	1,064,800	1,096,700
		1.000	1.025	1.051	1.077	1.104	1.132	1.160	1.189	1.219	1.249	1.280
Adjusted Meter Reading w/ CPI		665,652	686,000	909,900	960,400	1,014,000	1,071,000	1,130,400	1,193,400	1,260,200	1,329,900	1,403,800
TOTAL ADJUSTED OPERATING COSTS WITH CPI		1,540,544	1,610,800	1,990,000	2,100,600	2,217,800	2,342,400	2,472,400	2,610,200	2,756,200	2,908,800	3,070,500
CAPITAL COSTS												
Meter Replacement	CPI Adjustment		\$3,042,000	\$0	\$0	\$4,756,000	\$0	\$0	\$0	\$3,467,000	\$0	\$0
		1.000	1.025	1.051	1.077	1.104	1.132	1.160	1.189	1.219	1.249	1.280
Inflated Meter Replacement			\$3,118,000	\$0	\$0	\$5,251,000	\$0	\$0	\$0	\$4,226,000	\$0	\$0
ANNUAL COSTS			\$4,728,800	\$1,990,000	\$2,100,600	\$7,466,800	\$2,342,400	\$2,472,400	\$2,610,200	\$6,982,300	\$2,908,800	\$3,070,500
CUMULATIVE COST			\$4,728,800	\$6,718,800	\$8,819,400	\$16,288,200	\$18,630,600	\$21,103,000	\$23,713,200	\$30,695,500	\$33,604,300	\$36,674,800
Net Present Value - Discount Rate		4%	\$4,546,923	\$6,386,790	\$8,254,216	\$14,638,577	\$16,663,659	\$18,617,833	\$20,501,370	\$26,603,269	\$27,646,953	\$29,721,273
Baseline Assumptions												
Annual growth rates - Affect all categories			2.0%		2.5%		3.0%		3.0%		3.0%	3.0%
Meter conversion - Replace electronic registers with manual read registers for all meters, then go to replacement of meters in 2016 and 2020												
Increase current meter reading and billing cost by 25% to include manual reading (two meter technicians) for all accounts (see growth factor in FY14)												
Increase system maintenance cost by 25% to include manual reading (two meter technicians) for all accounts												
Increase phone customer service and field customer service to respond to human error in reading and data entry process by 10%												